BEHAVIOURAL CONSIDERATIONS FOR

ACCEPTANCE AND UPTAKE OF COVID-19 VACCINES

WHO TECHNICAL ADVISORY GROUP ON BEHAVIOURAL INSIGHTS AND SCIENCES FOR HEALTH



Meeting Report
15 October 2020

World Health Organization

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The following WHO staff also contributed to the document: Eloise Adsett; Cory Couillard; Leilia Dore; Benjamin Duncan; Nina Gobat; Katrine Bach Habersaat; Ljubica Latinovic; Lisa Menning; Thomas Moran; Tondo Opute Emmanuel Njambe; Martha Scherzer; and Iain Simpson.

1. BACKGROUND

On 15 October 2020, the WHO Technical Advisory Group (TAG) on Behavioural Insights and Sciences for Health held a special meeting with the WHO Department of Immunization, Vaccines and Biologicals to discuss behavioural considerations in relation to COVID-19 vaccine acceptance and uptake. The discussion focused on a series of key questions around achieving high and equitable uptake of vaccines through evidence-based and behaviourally informed strategies.

This meeting report is the product of the discussion held by WHO TAG members during the meeting. It covers only the topics that were addressed at the meeting. Following the meeting, the considerations and recommendations made by the members were refined through an iterative process that involved drafting by a core group, literature review and rounds of feedback from all the members. The considerations made by the TAG members during the meeting that were not supported by published evidence were removed with the consensus of the members. The review process was finalized on 15 November 2020.

The TAG members serve in their personal capacity and have completed a declaration of interest form that was subject to evaluation and approval prior to their nomination in July 2020.

This meeting report represents exclusively the views and opinions of the TAG members and does not represent the decisions or policies of WHO.

2. INTRODUCTION

In recent years, there has been a great deal of research on vaccination uptake and its behavioural drivers. While the evidence is still evolving, these efforts have resulted in a better understanding of the barriers and enablers to vaccination – especially, but not only, for child vaccination. Research efforts have also generated potentially effective strategies to improve vaccine acceptance and uptake, which go beyond traditional information campaigns aspiring to change behaviours by improving knowledge. Information on its own has shown a limited impact on facilitating vaccination uptake,

but adding other strategies – such as reducing barriers *(1)*, using reminders *(2)* and planning prompts *(3)*, and training and building confidence in health workers *(4, 5)* – has been shown to be effective.

While evidence on promoting vaccination in general is useful in the context of the current pandemic, the acceptance and uptake of COVID-19 vaccines present an unprecedented challenge. In addition to the sheer magnitude of the coming vaccination effort, the vaccines will be new and are likely to be only partially effective for a yet unknown period of time. There may be so-called adverse events rightly or incorrectly attributed to the new vaccines, and countries will set different safety thresholds before offering the vaccines to their populations. Given the limited supply in the short to medium term, vaccines are likely to be prioritized for health workers at high risk of acquiring or transmitting infection and older adults based on the framework developed by the WHO Strategic Advisory Group of Experts on Immunization *(6)*. Eventually vaccination efforts will expand to target diverse populations not typically reached with immunization programmes, both across and within countries. This will require targeted and tailored strategies, as well as management of expectations.

While the behavioural goal is uptake of COVID-19 vaccine by the general population, achieving that goal will depend on the behaviours of other "actors" in the system – those offering the vaccination, those planning how and where to offer the vaccination, and those tasked with maximizing uptake using strategies such as persuasion and the use of trusted endorsers (or "validators").

To achieve high and equitable vaccine uptake, the use of existing scientific knowledge is essential, as is acquisition of new information, and learning in real time about what works and what does not. Learning can be increased by engaging with target populations in local communities to listen and respond to their perspectives, concerns and expectations in relation to vaccination *(7)*. These efforts can play a role in building the trust of the community in health systems, and in informing the design and delivery of policies and services that are responsive and respectful to local needs.

Behavioural research identifies three categories of drivers of vaccine uptake, in addition to people having the necessary knowledge: 1) an enabling environment; 2) social influences; and 3) motivation. The three drivers interact and overlap, depending on contexts; however, for the purpose of understanding the problem and identifying strategies, it is helpful to keep the categories separate. An appreciation of each driver leads to its own set of insights and interventions, or mix of interventions, which will often vary across communities.

3. DRIVERS OF VACCINE UPTAKE

3.1 AN ENABLING ENVIRONMENT

Multiple groups influence uptake of vaccination, including political decision-makers, immunization programme managers, community and religious leaders, health workers, civil society organizations, media outlets and digital platforms *(1)*. These actors can facilitate or discourage vaccination by creating more or less enabling environments. It is, therefore, important to consider how the behaviours of actors in the system (for example, those responsible for planning locations offering vaccination or setting clinic opening times) might influence the behaviours of the general population.

Evidence has shown that reducing barriers and making it easy to get vaccinated will increase vaccine uptake, especially for the large proportion of people who are not deliberately avoiding vaccination *(8)*. What might seem to be reluctance or resistance, or even opposition, might actually be a response to the burdens or inconvenience of getting vaccinated.

Environmental factors might involve:

- **Location:** Is the vaccination being given in a close by, convenient place?
- **Cost:** Are any costs involved (for the vaccine itself, travelling, or opportunity costs of missing work), either monetary or non-monetary?
- **Time:** Is it time-consuming to be vaccinated? Is booking easy and accessible? Are vaccines delivered at a time of day that is convenient?
- **The quality of the experience of being vaccinated:** Do people feel that they are treated with kindness, understanding and respect? Are health workers well informed and able to answer questions about COVID-19 and vaccination?
- **Information:** Have people been given timely, easy to understand and relevant information about what they are supposed to do, how they are supposed to do it, and how they might benefit? Are the benefits and side-effects of the vaccine explained in plain terms?
- **The default:** Is the default in workplaces to vaccinate all employees, with provision for those who do not want to be vaccinated to opt out? Do health care providers present the opportunity to be vaccinated as the default option?
- **Health regulations or mandates:** Is vaccination mandatory to engage in certain activities, such as employment, education, travelling abroad or enrolling in day care?

In light of these factors, there are several ways to create enabling environments for encouraging widespread vaccination. Strategies include removing barriers in the environment and designing services and policies to support people's intended behaviours and circumstances. For instance, if the default in schools is to vaccinate all students, with the provision of allowing those who object to opt out, then vaccination rates will likely be higher than if the default is to provide vaccination only to those who opt in *(9)*. Making vaccines easily accessible in safe, familiar and convenient locations, such as "drop-in" clinics that are near where people often go, can also encourage uptake *(10)*. In the current pandemic where people have indicated concerns about seeking health services due to fear of contracting COVID-19 in health facilities *(11)*, ensuring that proper safety measures are visibly in place can encourage vaccination. Such measures include facilitating hand hygiene, physical distancing and mask wearing, ensuring rooms are properly ventilated and preventing crowds *(12)*.

An enabling environment is necessary and likely to increase acceptance and uptake of vaccination, but it is unlikely to be sufficient on its own. It should be accompanied by targeted, credible and clear communication from trusted sources demonstrating that getting vaccinated is important, beneficial, easy, quick and affordable. Of course, how easy, quick and affordable it is will vary from place to place, and health systems must be prepared to reduce barriers to supply, service delivery and quality of services, in addition to ensuring that health care and community workers are well trained and well supported *(13)*. Guidance, training, and other tools to support health systems prepare for the introduction of COVID-19 vaccines are currently being developed and made available for adaptation by countries *(14)*.

3.2 SOCIAL INFLUENCES

Sometimes, barriers to vaccine acceptance and uptake are the product of unfavourable social influences and/or insufficiently favourable ones. Such influences can include beliefs about what others in one's social group do, or what they approve and disapprove of ("social norms") *(15)*. For example, if most people in a community are wary of vaccination and believe that the vaccine does not work or that the side-effects will be very bad, they will give a negative signal to others who might otherwise be in favour of, or neutral towards, vaccination *(16)*. On the other hand, if most people in a community support vaccination, they will give a positive signal to others who might otherwise be reluctant to get vaccinated.

Predominant narratives in the media can also skew people's perception of what the majority believe and do *(17)*. For example, anti-vaccine sentiments expressed by relatively small but vocal groups may be promoted, so that they are erroneously seen as capturing a widespread or even majority view. During a pandemic in which people may be confined to their homes, perceptions of other people's behaviours (regarding, for example, mask wearing and physical distancing) are more likely to be inferred from mainstream

and social media and via information online, and less likely to result from direct interactions *(18)*. It is essential to educate the media on the importance of providing context when reporting on anti-vaccine sentiment, to make sure that people do not form an erroneous impression that this is the dominant viewpoint.

Vaccination decision-making is also influenced by people's social networks, which include family members, friends, health professionals and others with whom they interact, as well as the sources of information they consult. The likelihood of vaccine uptake was found to be reduced when a large proportion of people in one's social network did not recommend vaccination *(19)*. On the other hand, encouragement and social pressure from people that an individual respects and trusts have been found to increase vaccine uptake *(20)*. A willingness to get vaccinated, or an unwillingness to do so, can spread through a social cascade as one group of individuals influences another, and then the two influence a third, and so on. Targeting people who are centrally located in the network, such as health professionals who have more opportunities to influence vaccination behaviour, can lead to greater impact of behaviour change efforts *(21)*.

Social influences can be used to promote favourable behaviours of both health professionals and the general population. Five strategies to harness social influences are outlined below.

- **Making social norms in favour of vaccination more salient:** If the majority of people are getting vaccinated, or intend to get vaccinated, that fact can be publicized to good effect. Communication efforts to promote the perception that "most people are getting vaccinated" – if credible and true – are likely to increase vaccination acceptance *(22)*. Making vaccine uptake "visible" to others, through clinics in prominent public places or by enabling ways for people to signal that they have received the vaccine, either on social media, in news media or in person, can contribute to making the social norm more salient *(23)*.

- **Highlighting new and emerging norms in favour of vaccination:** If people learn that others are "increasingly" engaging in certain behaviours, they may be more likely to do so as well *(24)*. Communication efforts to highlight the development of new norms are especially relevant given that the COVID-19 vaccine will be targeting new groups where vaccination may not be the common or the expected behaviour.

- **Leveraging the role of health professionals:** Early priority groups for COVID-19 vaccines include health professionals, who are often the most trusted source of advice on vaccination *(25)*. Studies have shown that health professionals are more likely to recommend vaccination if they themselves have been vaccinated *(26)*. Hence, targeting efforts to facilitate the vaccination of health professionals can in turn lead to greater acceptance and uptake by the general population. These efforts can include improving health professionals' knowledge about the vaccine and increasing their co-workers' support for the vaccine *(26)*.

- **Supporting health professionals to promote vaccination:** Health professionals, including those who are already champions of vaccination, can be equipped with tools to effectively guide communication to encourage people to get vaccinated against COVID-19 *(27)*. Conversations guided by motivational interviewing, a collaborative method of interaction aimed at exploring people's real reasons for hesitancy and strengthening their own motivation for change, can facilitate vaccination *(5)*. Recommendations from providers have also been shown to be more effective when the opportunity to get vaccinated is presented as an expectation (the default) rather than an option – i.e., presuming that people will want vaccination *(28)*.

- **Amplifying endorsements from trusted community members:** An important role can be played by members of the community who are well respected, and who can connect with the group's identity and self-understanding. If endorsers share similar values and characteristics with the relevant group (such as religious or ethnic identity), they are more likely to be influential *(29)*. Endorsement of a COVID-19 vaccine by prominent scientists has also been found to increase trust in the vaccine *(30)*.

3.3 MOTIVATION

Motivation to get vaccinated is usually the result of a combination of factors, such as perceived risk and severity of infection *(31)*, confidence in vaccines *(32)*, values and emotions *(33)*. While motivation to get vaccinated can also be influenced by environmental and social contexts, the focus of this section is on motivational factors themselves.

If people perceive that they are at low risk of contracting COVID-19, or that the consequences of becoming infected will not be severe, they will be less willing to get vaccinated *(34)*. Some people may try to compare the risk of getting infected with that of taking a new vaccine, and determine that between the two, the risk of COVID-19 is lower *(32)*. As it is difficult for most people to understand and assess risks, these risk perceptions are often formed using mental shortcuts *(35)*. For instance, people often judge the likelihood of events by how readily they come to mind ("availability heuristic") *(36)*. As a result, they may downplay some risks (e.g. the likelihood and consequences of getting infected), while exaggerating others (e.g. the likelihood of adverse events following vaccination) based on personal experience or rumours.

Judging events or situations to be risky can also lead to fear, worry and anticipated regret, all of which have been shown to be associated with the intention to accept the offer of vaccination *(20, 37)*. Among these, anticipated regret – when people expect that an unpleasant future outcome would lead them to wish they had made a different decision – shows promise as predictor of intentions and behaviour *(31)*. How anticipated regret is used will determine the direction of its effect: anticipated regret for *inaction* (i.e., not having a vaccination and getting infected and/or infecting loved ones) has

been shown to be associated with a *greater* likelihood of vaccination, and anticipated regret for *action* (i.e., having a vaccination and suffering side-effects) has been shown to be associated with a *lower* likelihood of vaccination *(38, 39)*.

Low levels of vaccine acceptance can follow from low confidence in vaccines, as a result of, for example, the belief that the vaccine will not be effective or that the potential side effects will be severe *(40, 41)*. These concerns may be heightened in the current pandemic, where accelerated timelines may give people the impression that the vaccine was rushed and not tested thoroughly *(42)*. People may also have low confidence in the system that delivers vaccines, including the competence of health workers and motives of other actors *(43, 44)*. For example, confidence may be lowered by scepticism about the profit motives of pharmaceutical companies or the politicization of vaccination *(45)*. In the rapidly evolving situation with multiple uncertainties about COVID-19 vaccines, there is also danger of incorrect information filling the knowledge gap *(46)*. With the overabundance of information circulating around COVID-19 – also known as the "infodemic" – people are inevitably exposed to misinformation, rumours and false conspiracy theories, which may erode their confidence in vaccination. Developing trusted sources, fact-checking and responding to misinformation through dedicated dashboards are some of the strategies suggested to manage infodemics *(47)*.

Vaccine acceptance and uptake may also be undermined by COVID-19 vaccines being not fully effective, meaning that people will have to continue to engage in preventive behaviour (e.g. mask-wearing and physical distancing) even if and after they have been vaccinated. It will be important to manage expectations and ensure that those who have been vaccinated do not stop adhering to protective behaviours and expose themselves and others to risk *(48)*.

As shown above, there are individual and group differences: some may be hesitant toward vaccination due to beliefs that they have a low risk of infection, others may have concerns about the safety of vaccines, while others may be hesitant because of religious values or lack of trust in the health system *(25, 49)*. Engaging in dialogue with communities from the very beginning to understand their different motivations can be a good starting point for designing strategies to tackle specific barriers. Lessons learned from other outbreaks (e.g. Ebola) also highlight the need to actively monitor changes in community sentiments and needs through regular feedback mechanisms and to adapt strategies accordingly *(29)*.

Below are some strategies to tackle motivational barriers to vaccine acceptance and uptake.

- **Building timely trust in vaccines:** Evidence suggests that strategies which aim to change people's thoughts and feelings towards vaccination have not always been successful in increasing uptake *(1)*. It is therefore important to focus on building trust in COVID-19 vaccines *before* people form an opinion against them. This should involve using trusted messengers to help navigate the COVID-19 information landscape and building confidence in the vaccine development process through transparency and managing expectations. Adverse events are often inevitable when large numbers of people get vaccinated in a short period of time, and communities should be engaged early on to listen to concerns, respond to questions and address misinformation *(29)*. Experience suggests that widely rolling out a vaccine followed by announcements of adverse risks can lead to long-lasting damage in confidence in the vaccine *(46)*. Communicating consistently, transparently, empathetically and proactively about uncertainty, risks and vaccine availability will contribute to building trust.

- **Leveraging anticipated regret in communications:** Anticipated regret has been shown to be a strong predictor of vaccination, and there is potential promise in evoking it to encourage vaccination *(39)*. For example, highlighting the consequences of inaction (i.e., by asking people how they would feel if they do not get vaccinated and end up contracting COVID-19 or transmitting it to loved ones) during consultations with health professionals may encourage vaccination.

- **Emphasizing the social benefits of vaccination:** Vaccination not only benefits individuals who receive the vaccine, but also protects others in the community – family members and friends, and eventually the whole of society through "population immunity" if there is a high level of uptake. Communicating the social benefits of vaccination has been found to increase vaccination intention, particularly when the risk associated with vaccination is low and getting vaccinated involves little effort *(50)*. In the specific context of COVID-19, where there can be prolonged duration of illness, putting emphasis on the economic benefits, such as being able to stay in the workforce and provide for one's family, might also encourage vaccination.

4. CONCLUSION

Behavioural research has shown that vaccine acceptance and uptake can be increased by adopting the three strategies below.

- **Creating an enabling environment –** making vaccination easy, quick and affordable, in all relevant respects.
- **Harnessing social influences –** especially from people who are particularly trusted by and identified with members of relevant communities.
- **Increasing motivation –** through open and transparent dialogue and communication about uncertainty and risks, including around the safety and benefits of vaccination.

A common theme is engagement with local communities in developing and implementing tailored strategies to support vaccination uptake. Working in partnership with communities, building trust and ensuring that messages come from trusted endorsers are key to successful strategies. As local circumstances change over time, drivers of people's behaviour will shift as well; it is important to monitor and respond to these changes in as timely a manner as possible.

It is essential to consider local contexts when judging the relevance of research findings. While this report has sought to extract evidence-based principles that can be considered relevant across a wide range of populations and settings, the evidence available is overrepresented from high-income countries; these behavioural considerations should be further researched locally, including in underrepresented low- and middle-income settings, to inform targeted and context-specific interventions.

New evidence relevant to increasing COVID-19 vaccine acceptance and uptake will emerge over time, which means that obtaining and using up-to-date evidence is critical. This report is designed to provide a framework within which to consider new knowledge as it emerges and to help to shape forthcoming policies.

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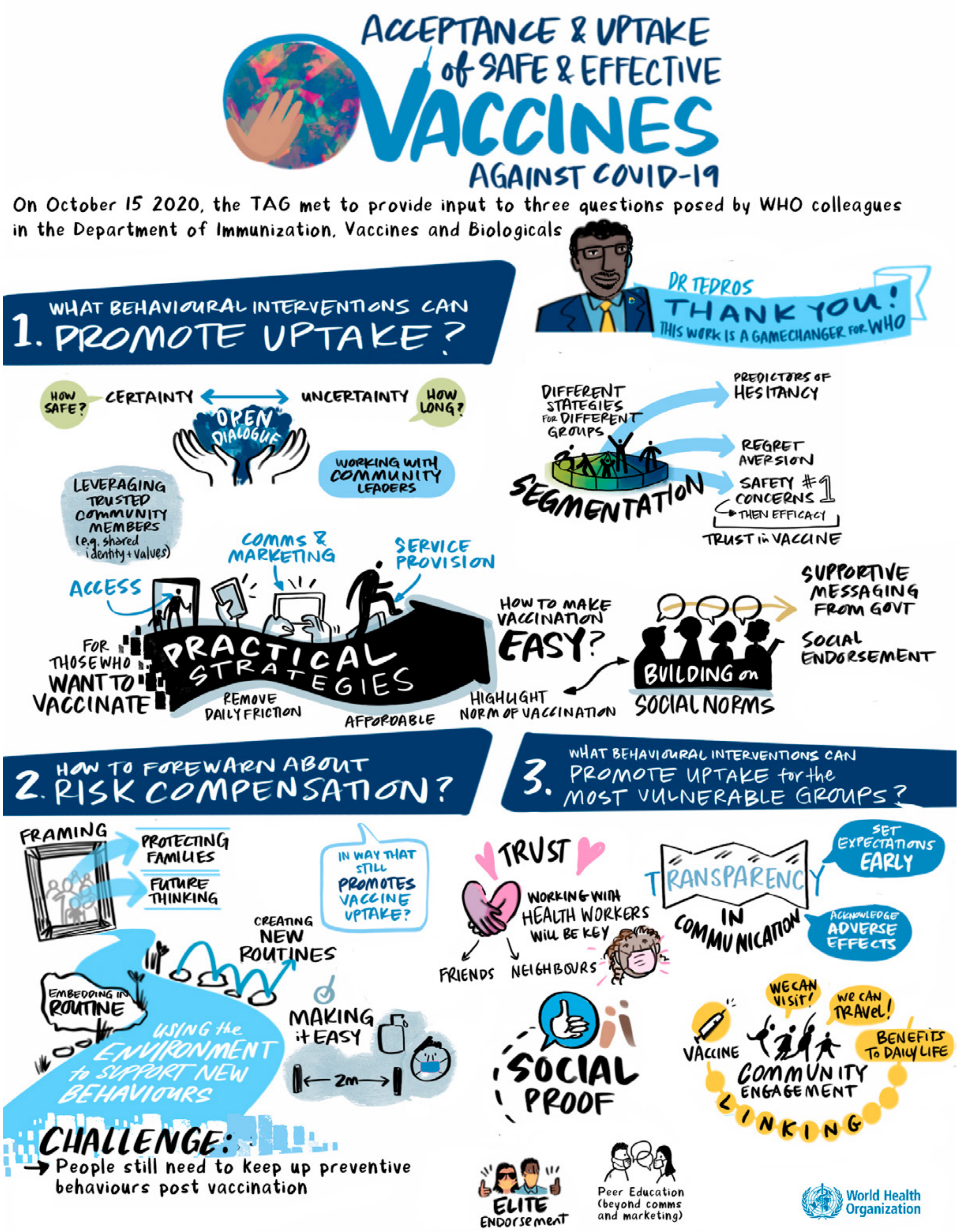
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The image above is a visual narration that captures highlights of the meeting on 15 October 2020, during which the TAG on Behavioural Insights and Sciences for Health discussed behavioural considerations in relation to COVID-19 vaccine acceptance and uptake. The discussion was structured around three key questions.

World Health Organization

Behavioural Insights Unit
behavioural.insights@who.int

9789240016927